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# COMPLETE SPECIFICATION

## Solubilizing of Mineral, Vegetable and Animal Oils for Cosmetic and Industrial Purposes

I, IRWIN IRVILLE LUBOWE, a Citizen of the United States of America, of 667, Madison Avenue, New York 21, New York, in the United States of America, do hereby declare this invention for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to solubilizing 10 of mineral, vegetable and animal oils (hereinafter simply called oils) in  $C_1$ - $C_{24}$  water miscible or water soluble monohydric aliphatic alcohols.

It has hitherto not been readily possible to 15 prepare clear non-separating solutions of oils with monohydric aliphatic alcohols, because oils are normally immiscible with monohydric aliphatic alcohols. The expression oil (or oils) in this specification therefore 20 refers to mineral, vegetable and animal oil, or oils which are normally immiscible with monohydric aliphatic alcohols.

Normally mixtures of monohydric aliphatic alcohols and oils will readily separate, 25 and therefore if prepared as temporary emulsions will have diminished pharmaceutical and therapeutic effectiveness, cosmetic consumer acceptance, industrial applicability and efficiency.

It is the primary object of the present 30 invention to provide a novel solubilized oil composition in which such oils will form a solution with the monohydric aliphatic alcohols and which product may be used as 35 a base for cosmetic preparations such as hair tonics, hand lotions, as well as facial astringents, anti-perspirant preparations, and anti-dandruff preparations.

According to the present invention I 40 provide a solubilized non-aqueous composition comprising a monohydric aliphatic alcohol as herein defined and an oil as herein defined made miscible and solubilized in each other by inclusion of a solubilizer comprising 45 an aliphatic alcohol and/or acid having 10 to

24 carbon atoms in the carbon chain in an amount ranging from 5% to 30% of the solubilized composition, with the oil and the monohydric aliphatic alcohol constituting substantially the whole of the balance in such 50 proportions that the monohydric aliphatic alcohol constitutes 20% to 40% of the composition and the oil constitutes 15% to 40% of the composition.

To prepare a hair lotion preparation 55 according to the invention I may add to the composition lanolin derivatives, antiseptics, rubefacients, estrogenic hormones, methyl sulfoxide and solubilized amino acids.

To prepare an anti-perspirant preparation 60 according to the invention I may add to the composition aluminium, zinc or zirconium salts and silicones and deodorants as hexachlorophene.

To prepare a silicone protective preparation 65 according to the invention I may add to the composition alcohol soluble silicones, as dimethyl polysiloxanes, lanolin derivatives and antiseptics, as hexachlorophene.

To prepare an after-shaving lotion accord- 70 ing to the invention I may add to the composition antiseptics, astringents, as aluminium, zinc or zirconium salts, and also antibiotics as tyrothricin, neomycin and bacitracin.

To prepare an acne preparation according 75 to the invention I may add to the composition compounds of sulphur, polysulfides, resorcin, Vitamins A and D, antibiotics as tyrothricin, neomycin and bacitracin.

To prepare a fungicidal preparation accord- 80 ing to the invention I may add to the composition salicylic acids, benzoic acids, the fatty acids, as propionic, undecylinic, caprylic and thioglycolic acids, and their salts.

To prepare an anti-dandruff lotion accord- 85 ing to the invention I may add to the composition sulphur, resorcinol, salicylates, organic sulfides and acetamides.

To prepare a hair lacquer preparation 90

according to the invention I may add to the composition silicones, polyvinylpyrrolidone (PVP), casein (protein hydrolysates) and lanolin derivatives.

5 To prepare a permanent waving solution according to the invention I may add to the composition thioglycollic acid salts, PVP, and casein (protein hydrolysates).

To prepare a superfatted transparent soap 10 according to the invention I may add to the composition a transparent soap mixture which contains an alkali, fatty acid, alcohol, and glycerine.

It is among the further objects of the present 15 invention to provide novel solutions of oils in monohydric aliphatic alcohols which will be highly effective in silicone protective lotions to give effective cutaneous protection against soaps, detergents, alkalies, sensitizers, 20 solvents, plasticizers and allergens as well as in various aerosol preparations which are used in the cosmetic field as for example, for hair and nail lacquers and shaving creams.

A further object is to provide a novel 25 composition of the character described which will be useful for the dispersion of cutting oils; drying oils, solvent oils, insect repellents, insecticides and dispersions of pigments in the paint industry.

30 Still further objects and advantages will appear in the more detailed description set forth below, it being understood, however, that this more detailed description is given by way of illustration and explanation 35 only.

The most satisfactory compositions are those which include as a solubilizer saturated or unsaturated fatty alcohols and/or acids having from 12 to 18 carbon atoms.

40 Such high molecular fatty alcohols and/or acids may be used by themselves or in combination with other ingredients to form the solubilizer. When combined with other ingredients these high molecular weight fatty 45 alcohols and/or acids should constitute between 25 to 100% of the solubilizer.

The solubilizer is preferably utilized in non-aqueous compositions, although small amounts of water, less than 5%, may be 50 present or added without causing separation of the oil and the monohydric aliphatic alcohol.

Although unsaturated fatty alcohols and/or acids are preferred for use as the solubilizer, 55 it is also possible to include saturated fatty alcohols and/or acids, or even hydroxylated fatty alcohols and/or acids which should preferably be used in minor proportions, as for example from 10% to 40% of the saturated 60 fatty alcohol and/or acid in the solubilizer.

These acids should preferably be used in minor proportions as compared to fatty alcohols and in amounts ranging from 10% to 40% of the fatty alcohols, and the fatty 65 alcohols and fatty acids together forming the

solubilizer should not constitute more than 30% of the final composition of oil, monohydric aliphatic alcohol, whether methyl alcohol, ethyl alcohol, or isopropyl alcohol or combinations thereof and the solubilizer. 70

The same is also true of compositions in which only fatty alcohols or fatty acids are used by themselves. It is usually preferable to use at least one unsaturated fatty acid or fatty alcohol in the solubilizer. 75

Among the mineral oils which may be used are the following:—

Light mineral oil such as light liquid paraffin.

Heavy mineral oil such as heavy liquid 80 paraffin.

Among the vegetable oils which may be used are the following:—

Sesame	Sweet almond	Palm	
Cotton seed	Apricot		85
Soybean	Peach kernel		
Sunflower	Safflower		
Corn	Olive		
Peanut	Pine		

Among the animal oils which may be used 90 are the following:—

Neatsfoot Oil	Cod Liver
Sperm	
Lanolin	
Bone Oil	

Among the fatty alcohols and the fatty acids which may be used are those which are as follows:—

Lauryl alcohol	Lauric acid	
oleyl alcohol	oleic acid	100
stearyl alcohol	stearic acid	
palmityl alcohol	palmitic acid	
linoleyl alcohol	linoleic acid	
linolenyl alcohol	linolenic acid	
ricinoleyl alcohol	ricinoleic acid	105
myristyl alcohol	myristic acid	
arachidyl alcohol	arachidyl acid	

A satisfactory combination is a mixture of lauryl alcohol and myristyl alcohol in equal proportions. 110

Generally, it is desirable to use the fatty alcohols and the fatty acids in such combinations as may be obtained by splitting them off from the vegetable or animal oils which are to be mixed with or solubilized with the 115 animal, mineral or vegetable oil in the following examples:—

As preferred, the solubilizers are set forth as follows:—

Mixture A			
lauryl alcohol	..	55%	120
linolenic acid	..	25%	
oleyl alcohol	..	20%	

Mixture B			
palmityl alcohol	..	20%	125
lauryl alcohol	..	20%	
oleyl alcohol	..	20%	
oleic acid	..	20%	
ricinoleic acid	..	20%	130

			Parts by Weight.	
<i>Mixture C</i>				
	oleyl alcohol	60%		
	oleic acid	40%		
<i>Mixture D</i>				
5	oleic acid	50%		
	linoleic acid	50%		
<i>Mixture E</i>				
	linoleic acid	40%		
	oleyl alcohol	60%		
10	Preferably the final oil-alcohol combination contains from 15% to 40% of the vegetable or mineral oils, from 20% to 40% of the low molecular weight alcohols, and from 5% to 20% of the solubilizers above.			
15	The composition should always contain from 20% to 40% of a low molecular weight aliphatic alcohol, such as ethyl or isopropyl alcohol. Methyl alcohol may be used in industrial products instead of ethyl or isopropyl alcohol.			
20	Instead of oleic acid, lauric acid or oleyl alcohol in the above examples, it is possible to use other saturated or unsaturated or hydroxylated fatty alcohols or acids having from 12 to 18 carbon atoms in the same amounts.			
25	In the preferred composition there is employed about 10% to 20% of the solubilizer. The preferred mineral oil is light or heavy liquid paraffin.			
30	The preferred vegetable oils are sesame oil, cotton-seed oil, soyabean oil, sunflower seed oil, Safflower, Palm linseed oil and corn oil. Sweet almond oil, Pine, apricot oil, peach kernel oil, avocado oil, olive oil, rice bran oil and peanut oil may also be employed. Animal oils included are Neats Foot, sperm, Lanolin and bone oil. As an additional ingredient essential oils may also be included.			
40	To give specific examples:—			
<i>EXAMPLE F</i>			<i>Parts by Weight.</i>	
	Light liquid paraffin	20 to 60		
	Ethyl or isopropyl alcohol	40 to 60		
45	Solubilizer	10 to 40		
<i>EXAMPLE G</i>			<i>Parts by Weight.</i>	
	Cottonseed oil	20 to 40		
	Ethyl or isopropyl alcohol	40 to 60		
	Solubilizer	5 to 25		
50	<i>EXAMPLE H</i>			
	Sesame oil	40		
	Ethyl or isopropyl alcohol	40		
	Solubilizer	5 to 25		
<i>EXAMPLE I</i>			<i>Parts by Weight.</i>	
55	Corn oil	10 to 50		
	Ethyl alcohol	10 to 50		
	Solubilizer	10 to 30		
<i>EXAMPLE J</i>			<i>Parts by Weight.</i>	
	Linseed oil	40		
60	Isopropyl alcohol	40		
	Oleic acid	10		
	Linoleic acid	10		
<i>EXAMPLE K</i>			<i>Parts by Weight.</i>	
	Soyabean oil	40		
65	Isopropyl alcohol	40		
			<i>Parts by Weight.</i>	
	Oleic acid	10		
	Linoleic acid	10		
<i>EXAMPLE L</i>			<i>Parts by Weight.</i>	
	Liquid paraffin	20		
	Ethyl alcohol	50		
	Lauryl alcohol	10		
	Oleyl alcohol	10		
<i>EXAMPLE M</i>			<i>Parts by Weight.</i>	
	Virgin olive oil	20		
	Isopropyl alcohol	50		
	Oleyl alcohol	10		
	Double distilled oleic acid	10		
<i>EXAMPLE N</i>			<i>Parts by Weight.</i>	
	Mineral oil	10		
	Peanut oil	30		
	Isopropyl alcohol	40		
	Double distilled oleic acid	10		
	Oleyl alcohol	10		
The above compositions are desirably anhydrous and non-separating and are particularly useful in cosmetics in that they will be highly stable over a wide range of temperatures for long periods of time without separation.				
All the compositions are miscible with methyl, ethyl or isopropyl alcohol in any proportions.				
The freezing point of the composition is 95 depressed and better lubricating properties are obtained in machinery bearings, as well as in cutting oil used in metal working industries.				
To give an example of a cosmetic composition useful as a sun screening lotion:—				
<i>EXAMPLE O</i>			<i>Parts by Weight.</i>	
	Paraminobenzoic acid	15		
	Light liquid paraffin	40		
	Isopropyl alcohol	15		
	Oleyl alcohol	10		
	Lauryl alcohol	10		
<i>EXAMPLE P</i>			<i>Parts by Weight.</i>	
<i>SILICONE HAND LOTION</i>				
	Low viscosity silicone oil, viscosity 1,000 cs.	15		
	Soyabean oil	15		
	Isopropyl ester of lanolin	10		
	Isopropyl alcohol	40		
	Mixture E	25		
<i>EXAMPLE Q</i>			<i>Parts by Weight.</i>	
<i>INSECTICIDE SOLUTION</i>				
	Mineral oil (light)	30		
	Isopropyl alcohol	30		
	Mixture D	5		
	Insecticides { 2,4 hexandiol	5		
	dimethyl phthalate	5		
<i>EXAMPLE R</i>			<i>Parts by Weight.</i>	
	Light liquid paraffin	40		
	Ethyl alcohol	40		
	Lauryl alcohol	10		
	Oleyl alcohol	10		

## EXAMPLE S

	Parts by Weight.
Sesame oil .. .. .	40
5 Isopropyl alcohol .. .. .	40
Oleyl alcohol .. .. .	10
Double distilled oleic acid .. .. .	10

## EXAMPLE T

	Parts by Weight.
Cottonseed oil .. .. .	40
10 Isopropyl alcohol .. .. .	40
Oleyl alcohol .. .. .	10
Lauryl alcohol .. .. .	10

It is apparent that many variations may be made in the formulae.

## 15 What I claim is:--

1. A solubilized non-aqueous composition comprising a monohydric aliphatic alcohol as herein defined and an oil as herein defined made miscible and solubilized in each other
- 20 by inclusion of a solubilizer comprising an aliphatic alcohol and/or acid having 10 to 24 carbon atoms in the carbon chain in an amount ranging from 5% to 30% of the solubilized composition, with the oil and the
- 25 monohydric aliphatic alcohol constituting substantially the whole of the balance in such proportions that the monohydric aliphatic alcohol constitutes 20% to 40% of the composition and the oil constitutes 15% to 40% of the composition.

- 30 2. A composition comprising 20-50 parts of an oil, 20-50 parts of a monohydric aliphatic alcohol, 5-20 parts of a  $C_{10}$ - $C_{24}$  aliphatic alcohol and/or acid forming a solubilizer and water up to 5% of the weight of the monohydric aliphatic alcohol.

- 35 3. A process of making a solubilized composition according to Claim 1 or 2 which comprises mixing a monohydric aliphatic alcohol, an oil normally immiscible in the alcohol and an aliphatic alcohol and/or acid having 10 to 24 carbon atoms in the carbon chain.

- 40 4. A process according to Claim 3 which comprises mixing a mineral oil with isopropyl alcohol, oleyl alcohol and oleic acid.

5. A composition according to Claim 1 or 2 in the form of solubilized liquid paraffin comprising:--

	Parts by Weight.
50 Light liquid paraffin .. .. .	40
Ethyl alcohol .. .. .	40
Lauryl alcohol .. .. .	10
55 Oleyl alcohol .. .. .	10

6. A composition according to Claim 1 or 2 in the form of solubilized sesame oil composition comprising:--

	Parts by Weight.	60
Sesame oil .. .. .	40	
Isopropyl alcohol .. .. .	40	
Oleyl alcohol .. .. .	10	
Double distilled oleic acid .. .. .	10	

7. A composition according to Claim 1 or 2 in the form of solubilized cottonseed oil composition comprising:--

	Parts by Weight.	70
Cottonseed oil .. .. .	40	
Isopropyl alcohol .. .. .	40	
Oleyl alcohol .. .. .	10	
Lauryl alcohol .. .. .	10	

8. A composition according to Claim 1 or 2 in the form of solubilized soyabean oil composition comprising:--

	Parts by Weight.	80
Soyabean oil .. .. .	40	
Isopropyl alcohol .. .. .	40	
Oleic acid .. .. .	10	
Linoleic acid .. .. .	10	

9. A composition according to Claim 1 or 2 in the form of solubilized linseed oil composition comprising:--

	Parts by Weight.	85
Linseed oil .. .. .	40	
Isopropyl alcohol .. .. .	40	
Oleic acid .. .. .	10	
Linoleic acid .. .. .	10	

10. A composition according to Claim 1 or 2 in the form of solubilized Neats Foot oil composition comprising:--

	Parts by Weight.	95
Neats Foot oil .. .. .	30	
Isopropyl alcohol .. .. .	50	
Lauryl alcohol .. .. .	15	
Myristyl alcohol .. .. .	5	

11. A solubilized composition substantially as hereinbefore described.

12. A process of making a solubilized composition, according to Claim 11, substantially as hereinbefore described.

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